

**Ernest Orlando Lawrence  
Berkeley National Laboratory  
Safety Review Committee**

**Biennial Review  
Environment, Health and Safety (EHS) Division  
Management of Environment, Safety and Health (MESH)  
July 23-27, 2007**

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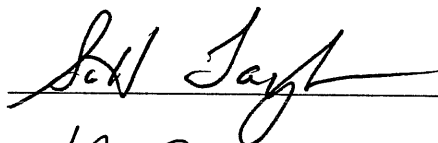
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## 1.0 DESCRIPTION OF REVIEW PROCESS

The Lawrence Berkeley National Laboratory (LBNL) is committed to perform work safely in order to protect the employee, the public and the environment and to continually improve its environmental, safety and health (ESH) efforts. To achieve these goals, LBNL takes a comprehensive institutional approach to Integrated Safety Management System (ISMS), which identifies requirements for all operations on the main site, or at any other sites where LBNL employees and subcontractors work. In addition to LBNL's ISMS Description, Divisions are required to develop division-specific documents that outline the safety and environmental management mechanisms, work planning and authorization processes. Independent assessments are performed by the Safety Review Committee (SRC) to evaluate each Division's management of environment, safety, and health (MESH) in its operations and/or research, focusing on the implementation and effectiveness of the Division's ISM Plan.

This MESH Review was performed of the Environmental, Health and Safety (EHS) Division July 23 -27, 2007 to evaluate the implementation and effectiveness of the EHS ISM Plan. The EHS Division's primary mission is to ensure that workers, the public and the environment are protected by providing professional and technical expertise, support services, and integrated ESH policy to the LBNL research and support programs. The scope of this Review included document and record review, personnel interviews, walkarounds through selected facilities, and observation of processes.

### Personnel Contacted During the Review

Employee Name	Pre-Review Meeting	During Review	Post-Review Meeting
Paul Blodgett		X	
Chris Donahue		X	
Anthony Fernandez		X	
Howard Hatayama	X	X	
Iraj Javandel		X	
James Johnson		X	
Steve Louie		X	
Don Lucas	X		X
Mike Ruggieri	X	X	X
Nancy Rothermich		X	

### Field Activities During the Review

A tour of the Hazardous Waste Facility and an explanation of the processes for receipt and storage of various types of waste were included as part of the Review.

## 2.0 EXECUTIVE SUMMARY

Three noteworthy practices, two concerns, one institutional concern, and four observations were identified as a result of this review. The noteworthy practice was specific to excellent communication between management and staff within each specific EHS group and the division's approach to improve ergonomic safety for its personnel as well as for the commitment of the division director to improve communication across the technical groups. The concerns were specific to less-than-adequate implementation of specific requirements outlined in the EHS ISM Plan. The institutional concern was specific to training requirements for guests and rehires. The observations were specific to resource (human capital, budget, and vehicles) maintenance and/or improvement; segregating EHS Division-specific issues from EH&S institutional issues and other Divisions' ES&H issues; and the lack of communication across operational groups within the Division. Further, was observed that the EHS Division does not have a dedicated EHS Safety Coordinator be appointed to be the single point-of-contact and liaison for divisional ES&H activities, issues and concerns.

Based on personnel interview, observation of processes, and review of objective evidence it has been determined that, with the exceptions noted, the EHS Division is effectively manages and protects the safety and health of their workers, the public and the environment in accordance with the requirements outlined in the EHS Division ISM Plan.

## 3.0 BACKGROUND

The EHS Division is faced with a number of unique considerations. It is comprised of eight technical groups and one administrative group. These include Security and Emergency Operations; Waste Management; Radiation Protection; Environmental Services; Technical Services; Health Services; Industrial Hygiene; Occupational Safety; and Administration/Finance. Approximately 110 employees and guests located in a number of buildings around the site and provide support at LBNL locations on the hill and in Berkeley.

Additionally, the Division Director was appointed in November 2006 after "acting" as Division Director since December 2005. A new Deputy Division Director was appointed in July 2007 after five months of this position's vacancy.

Despite the changes in senior management, significant effort has been made to integrate the operational groups into a cohesive Division to minimize isolation of these entities. This has been accomplished, in part, by reviving social activities to get people to interact and communicate on a regular basis. Staff and All Hands meetings are held by the Division Director on regular periodicities to share information across groups, accomplishments across the Division, and to discuss areas of importance to specific groups.

The July 2005 EHS MESH Review identified a number of areas in need of improvement or concern which are outlined below:

- Concern: Managers are not exercising sufficient scrutiny in reviewing accident and occurrence reports for completeness and accuracy.  
Status: PUB-3000 was revised to address use of procedures for injury/occurrence reviews, and an Incident Review Board was created to discuss and evaluate OSHA recordable injuries and other incidents.

- Observation: Integration of the new EHS management chain  
Status: Since the 2005 EHS MESH Review, a Division Director, a Deputy Division Director and an Occupational Safety manager were hired. EHS management has initiated activities and programs to improve communication across the division.
- Institutional Observation: Identification and consideration of EHS resources for new projects  
Status: EHS budget has increased over the past couple of years to address the need for EHS resources on new projects.
- Institutional Observation: A safety lapse with regard to radioactive material could lead to the reclassification of LBNL to a "Nuclear Facility" by DOE. Any review panel of EH&S Division whose charge contains radiological control issues include specialists with intimate knowledge of DOE regulations concerning radioactive material and radiological areas management.  
Status: Such a review has not been performed since the 2005 EHS MESH Review. A 10 CFR 835 Tri-ennial review of LBNL was performed in March, 2007 which involved such specialists from other DOE Labs.
- Institutional Observation: Human capital retention  
Status: To date, this issue has not been resolved.

## 4.0 REVIEW RESULTS

Specific conditions regarding the adequacy and implementation of the EHS Division ISM Plan are identified in this report. These conditions include noteworthy practices, which are conditions recognized for their excellence; observations, which are those items that, if not addressed, may lead to program and/or performance deficiencies; and concerns, which are program and/or performance deficiencies and are required to be resolved. Concerns must be entered into the Corrective Action Tracking System (CATS) database and tracked through resolution.

### 4.1 *Define the Scope of Work*

EHS tasks that are to be accomplished as part of any given activity must be clearly defined in order to identify the hazards and risks associated with that activity. EHS job descriptions identify the scope of work for each employee or functional position within the Division. These descriptions provide detailed descriptions of day-to-day activities, responsibilities and expectations of EHS personnel.

### 4.2 *Analyze the Hazards*

There are a number of ways in which hazards are identified and analyzed by EHS personnel prior to work and when new hazards present themselves.

The Job Hazard Questionnaire (JHQ), to be completed by each employee within 30 days of their date of hire, identifies required and recommended training commensurate with the potential hazards an employee may be faced with while performing their job functions.

Certain work activities pose hazards that require additional analyses. Depending on the hazard, the cognizant individual is required to document, in a formal authorization, the work, the associated hazards, administrative and engineering controls, and training and qualification for those who may be exposed to these hazards. Formal authorizations may include the Activity Hazard Document (AHD), which is developed when hazards exceed a specific threshold; the Radiological Work Authorization (RWA); Radiological Work Plan (RWP).

The Hazard, Equipment and Authorization Review (HEAR) database is to be utilized during the development of a formal authorization to identify the hazards, equipment and authorizations described for a particular area.

Regular meetings take place between management and staff during which new tasks and potential hazards are discussed. Review of the AHD and RADAR databases indicates that formal work authorizations, where required, are being developed prior to the start of work. The HEAR database, however, is not being utilized on a regular basis as the quality of data contained within is less than adequate. This is further addressed in Section 3.4, *Perform Work within Controls*.

#### 4.3 *Develop and Implement Hazard Controls*

A number of administrative and engineering controls have been developed and/or are used by the EHS Division. At a high level, the EHS Division is required to adhere to LBNL/PUB-3000, *Health and Safety Manual*, and the EHS Division ISM Plan. Additional controls are developed and implemented at the group level.

EHS administrative controls include the JHQ, which identifies required and recommended training for EHS employees based on tasks and the associated potential hazards and risks; and formal authorizations identify the controls necessary for specific work activities. Formal authorizations and JHQs are reviewed at least annually and one-on-one meetings between supervisors and employees are regularly held to determine if hazards have changed or new potential hazards may exist requiring additional controls to be developed and implemented.

Additional administrative controls such as Standard Operating Procedures (SOPs) have been developed within each group to implement standards and requirements in order to reduce risks to acceptable levels. SOPs and other work controls may be accessed on a specific group's website and changes to these controls are communicated through group meetings, required reading, and one-on-one meetings.

**Noteworthy Practice 3.3.1:** Ergonomics safety has been identified as a key safety concern of the division, and is addressed in most DSC meetings. To improve awareness and safety in this area, several steps have been implemented. Eighty-six ergonomic evaluations have been performed for staff, and actions necessary to resolve ergonomic issues have been addressed in a timely manner.

#### *4.4 Perform Work within Controls*

Generally, work is performed in accordance with documented policy and procedure. However, there were a number of instances where compliance with certain requirements outlined in the EHS ISM Plan was not achieved, which are identified in the "Concerns" portion of this section. Management accountability for failure to follow policy, procedure and/or instruction is one area that is in need of improvement.

**CONCERN 4.4.1:** There were some instances where certain requirements outlined in the EHS ISM Plan are not being met. These include:

b. Completion and/or update of JHQs

- i. Requirement: EHS ISM Plan, Section 3.2, Bullet 3 states, in part, "Identify ESH training requirements for employees ...and ensure training is completed and documented."
- ii. Condition: 46 out of 188 EHS employees, guests and contractors who are not within the 90-day grace period of initial employment date, have never taken and/or annually reviewed/updated their JHQs.

c. Completion of required training

- i. Requirement: EHS ISM Plan, Section 3.2, Bullet 3 states, in part, "Identify ESH training requirements for employees ...and ensure training is completed and documented."
- ii. Condition: 122 out of 1428 required training courses have not been taken by EHS personnel. This figure was adjusted to exclude 22 courses that were required for EHS personnel within the 90-day grace period of employment date. There is a correlation between this issue and Institutional Concern 4.4.2.

**CONCERN 4.4.2:** There are two EHS Division Safety Coordinators, which dedicate a total of approximately 30% of time to the EHS Coordinator function for the Division and have other job responsibilities that appear to have precedence over the Coordinator role. Based on conversations with Group Leaders, the direct support (such as coordinating required training and qualification activities, reminding Group Leaders of upcoming walk-around or meeting requirements, and general support activities) provided by the Division Safety Coordinators is less than adequate. As a result, the Group Leaders spend a large amount of time focusing on the safety activities to ensure the safety of their employees and compliance with ISM functions suffers. One Division Safety Coordinator dedicated to the ESH function would significantly assist the Group Leaders in their safety responsibilities and potentially reduce the instances of safety non-compliances. Line managers in the EHS Division are given more direct responsibility for safety than in other divisions.

**INSTITUTIONAL CONCERN 4.4.3:** There were a few instances where objective evidence could not be presented to show compliance with the completion of the JHQ within 30-days of the date of hire for some LBNL employees and/or guests:

- a. JHQ Completion Non-Compliance for Employees and Guests who work at LBNL on an Infrequent or Sporadic Basis
  - i. Requirement: LBNL/PUB-3000, *Environmental, Safety and Health Manual*, Chapter 24, EH&S Training, section 24.4.3 states, in part, "Employees, guests, students, contractors with appointments of more than 30 calendar days (must) complete a Job Hazard Questionnaire with the first 30 days of appointment."
  - ii. Condition: A number of employees and guests who work at LBNL on an infrequent or sporadic basis but more than 30 consecutive days have not taken the JHQ as required. Required training that would otherwise be identified in personnel training profiles is not identified since these employees have not taken the JHQ. In a number of instances, management has waived this requirement, without documented justification or policy allowance/criteria for waiver, for people who may work less than 10 hours a month, are on call, or work only a day or two every few months but have been working for LBNL over 30 consecutive days. Additionally, the criteria for waiving JHQ, training, and other requirements are nonexistent.

**OBSERVATION 4.4.1:** There were some instances where certain requirements outlined in the EHS ISM Plan are not being met. These include:

- a. Inspection and documentation of Satellite Accumulation Areas
  - i. Requirement: EHS ISM Plan, Appendix II, states, in part, "The SAA Checklist...will be used for performing quarterly inspections."
  - ii. Condition: No objective evidence was provided to show compliance with this requirement.

- b. Annual update of the HEAR database
  - i. Requirement: EHS ISM Plan, Section 3.2, Bullet 7 states, "Group Leaders...Annually review and update the HEAR. All locations are updated annually."
  - ii. Condition: Some EHS locations have not been reviewed or updated on an annual basis. Additionally, a number of entries were identified but pertinent information was not entered (e.g. point of contact, responsible person, project title) and/or the information contained in the entry was incorrect.
- c. Resolution of CATS entries in a timely manner
  - i. Requirement: EHS ISM Plan, Sect. 3.2 Bullet 8 states, "Track ESH deficiencies in CATS. Ensure findings are reviewed, approved and closed in a timely manner."
  - ii. Conditions:
    - CATS ID 3768 (EHS027 safety walk-arounds): Review of IRIS training records indicates that 4 Group Leaders and 6 members of the EHS Safety Committee did not take this course as required per the corrective action. This finding was closed prior to completion of the corrective action. This CATS entry has been reopened, and a new end date has been identified. No further action is required at this time.
    - CATS ID 3770 (SAA Training for DSC and Group Leaders): Review of the IRIS Training report indicates that 5 Group Leaders and 6 EHS Safety Committee members did not take this training as required per the corrective action. This CATS entry has been reopened, and a new end date has been identified. No further action is required at this time.

**OBSERVATION 4.4.2:** The EHS organization provides a variety of technical and professional services to eighteen divisions across LBNL. While budget and staffing levels have increased, there still may not be sufficient resources to perform work safely, efficiently, and within the controls. New projects that will require EHS support include the Molecular Foundry; Helios building; the Hostel; J-Bay; and Building 50, 74, 79 and 83 seismic retrofits.

EHS management recognizes the need for sufficient resources and has requested additional resources from senior Lab management.



**OBSERVATION 4.4.3:** It is difficult for the EHS Division to separate EHS-specific issues from ES&H functional areas that may be the responsibility of another Division or the Institution. It is not clear how other Divisions are made aware that they are responsible for these issues, and in some instances the EHS Division puts greater priority on Institutional ES&H issues as opposed to EHS Division-specific issues. A methodology/mechanism to separate EHS Division issues from general ES&H issues that may be the responsibility of other Divisions or the Institution should be developed.

EHS management is aware of this problem and has started to address this concern by focusing its Division Safety Committee meetings on EHS-specific safety concerns and issues.

#### *4.5 Provide Feedback and Continuous Improvement*

EHS assesses their organization and solicits employee feedback in order to continually improve their work processes and programs. This is accomplished via internal and external assessment, employee suggestions, lessons learned, and operational awareness.

EHS group leaders and supervisors perform regular workspace safety walkarounds to gauge safety levels and identify new and potential hazards in the workspace on a weekly to monthly basis.

EHS performs division self-assessments and Integrated Functional Appraisals, recently replaced by Technical Assurance assessments, which are other assessment activities used to evaluate effectiveness and implementation of internal procedures/instructions as well as to identify and resolve issues.

The EHS Division hosts a Division Safety Committee (DSC) to advise and make recommendations to the EH&S Division Director on safety, health and environmental protection matters that may affect the health and safety of Division employees, guests and visitors, or that may adversely affect the general public or the environment. Additionally, the DSC conducts self-assessments of EH&S Division operations and activities to facilitate the implementation of the Division's Integrated Safety Management (ISM) Plan and the Division's Self-Assessment Program. The DSC is chaired by the Division Director and its agenda is targeted to address division specific safety concerns and issues. The EHS Division has done a good job of putting issues identified through assessment activities into the CATS database.

The Division Director, group leaders, and supervisors hold regularly-scheduled meetings (individually or collectively) to promote safety awareness, address new and modifications to policy and procedure, identify new hazards, address lessons learned, and to address the concerns or needs of the general employee.

**NOTEWORTHY PRACTICE 4.5.1:** The Division Director recognized that communication between group leaders and senior management is an area in need of improvement, and, as a result, now chairs the EHS Division Safety Committee to enhance safety communication.

**NOTEWORTHY PRACTICE 4.5.2:** Based on interviews with group leaders, supervisors, and general employees, regular communication flows up and down the chain of command within groups. Supervisors and employees regularly meet one-on-one, and employees talk openly on a variety of matters with their supervisors.

**OBSERVATION 4.5.1:** Safety communication, such as sharing of near misses and safety practices, across groups is less-than-adequate. Personnel interviewed indicated that communication within their specific organization takes place on a regular basis, but in adequate communication takes place across organizations. It was also stated that, in a number of instances, during new policy/procedure development and/or when changes are made that may impact an interfacing EHS organization, the interfacing organization is typically not communicated with prior to the addition of or change to such policy/procedure.

## 5.0 CONCLUSION

Based on personnel interview, observation of processes, and review of objective evidence it has been determined that the EHS Division management is committed to the maintenance and enhancement of the safety and health of its employees, the public and the environment in accordance with the requirements outlined in the EHS Division ISM Plan.

Areas in need of improvement were identified in the following areas; compliance with JHQ and training requirements, inspection and documentation of SAAs, annual updates of the HEAR database, timely resolution of issues, improved communications across technical groups, availability of sufficient resources, and support from the division to ensure compliance with divisional safety requirements as outlined in the EHS Division ISM Plan.